

C B T M

Communications Based Train Management
Update

March 28, 2001

CBTM Status

- **Wabtec's obligation under the original contract was complete on October 11, 2000**
- **CSX has entered into a service agreement with Wabtec, beginning January 1, 2001, to keep CBTM working as a pilot system**



CBTM Service Agreement

- **Full-time Field Service Engineer in Spartanburg**
 - Responsible for monitoring and troubleshooting locomotives and wayside equipment
 - Represents CBTM to CSX personnel
- **Monthly reports**
- **Spare Parts**
- **Antenna replacement**



Old CBTM GPS Antenna

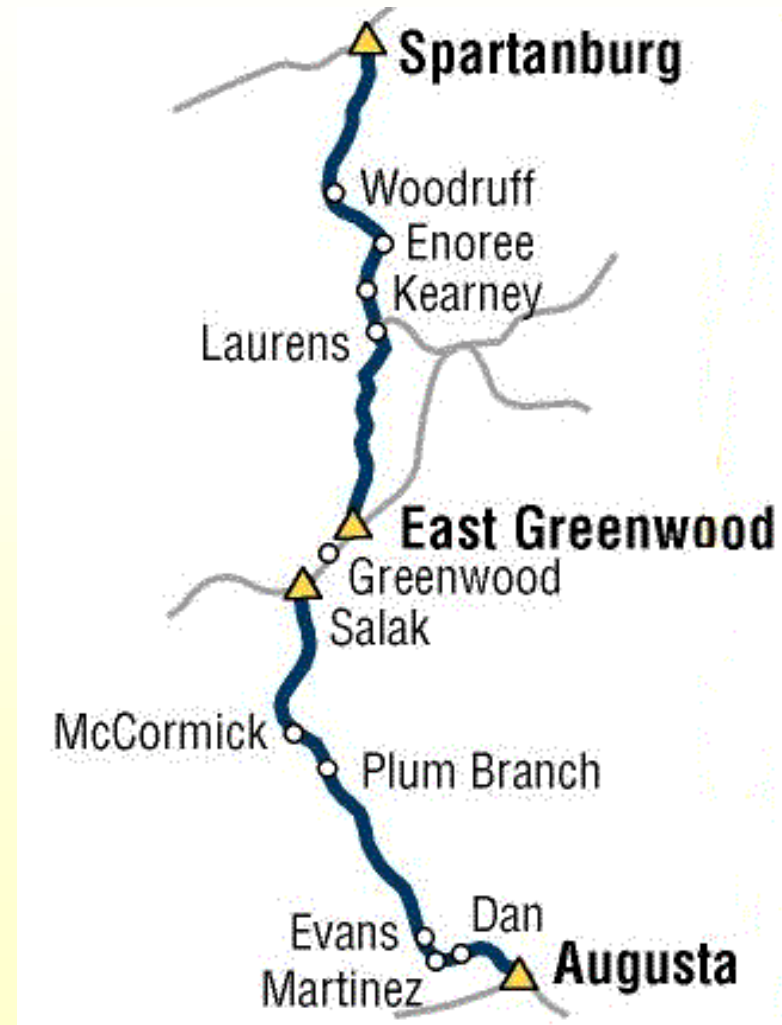


New CBTM GPS Antenna



CBTM Enhancement

- **Violated Authority Warning (VAW)**
 - CBTM warns and enforces the non-violating train when it determines that an equipped locomotive is occupying a block for which it does not have authority
 - Low speed
 - Isolated mode
 - Stopped long
 - Revocation of authority



CBTM VAW Message



CBTM Enhancement

- **Violated authority warning (VAW)**
 - Lab qualification tests complete
 - Field tests planned for the week of April 16th



CBTM Expansion

- **Development of Functional Specifications for:**
 - ABS territory
 - Digital Authorities
 - Remote Power Switch
- **Help build business case to justify cost**

